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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/568,838	02/17/2006	Michael Grass	DE030297	6996
24737 7590 06/25/2008 PHILIPS INTELLECTUAL PROPERTY & STANDARDS P.O. BOX 3001 BRIARCLIFF MANOR, NY 10510				
EXAMINER				
KAO, CHIH CHENG G				
ART UNIT		PAPER NUMBER		
2882				
MAIL DATE		DELIVERY MODE		
06/25/2008		PAPER		

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

# Office Action Summary

## Application No.

10/568,838

## Applicant(s)

GRASS ET AL.

## Examiner

Chih-Cheng Glen Kao

## Art Unit

2882

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-10 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-9 is/are rejected.
- 7) ☒ Claim(s) 10 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 17 February 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  - ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-946)
- 3) ☒ Information Disclosure Statement(s) (PTO/SF/US)  
Paper No(s)/Mail Date 2/17/06, 5/3/07
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_

## DETAILED ACTION

### *Specification*

1. The specification is objected to because it refers to claims numerous times (pg. 1, lines 20-21), which may create discrepancies and new matter issues if future claim amendments were to be made. Therefore, the examiner suggests removing all references to the claims that are in the specification.

Appropriate correction is required.

### *Claim Objections*

2. Claims 1-10 are objected to because of the following informalities, which appear to be minor draft errors including grammatical and/or antecedent basis problems.

In the following format (location of objection; suggestion for correction), the following correction(s) may obviate the objection(s): (claim 1, line 1, "the three-dimensional"; deleting "the"), (claim 1, line 1, "the flow"; deleting "the"), (claim 1, line 2; replacing "the aid of" with --aid from--), (claim 1, line 6, "the controlled"; deleting "the"), (claim 1, line 11, "the inflow"; deleting "the"), (claim 1, line 14; replacing "Bi" with --B<sub>i</sub>--), (claim 3, lines 1-2, "the rotation X-ray unit"; changing the dependency of claim 3 from claim 1 to claim 2), (claim 7, line 1, "the three-dimensional"; deleting "the"), (claim 7, line 1, "the flow"; deleting "the"), (claim 7, line 2; replacing "the aid of" with --aid from--), (claim 7, line 5, "the inflow"; deleting "the"), (claim 7, line 7; replacing "it" with --the vascular system--), (claim 9, line 2, "the radiation dose"; deleting "the"), and (claim 10, line 2, "the drainage"; deleting "the").

Claims 2-6 and 8-10 are objected to by virtue of their dependency. For purposes of examination, the claims have been treated as such. Appropriate correction is required.

***Claim Rejections - 35 USC § 112***

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claim 4 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The phrase "preferably" in line 3 renders the claim indefinite because it is unclear whether the limitation(s) following the phrase are part of the claimed invention. See MPEP § 2173.05(d).

***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 1-4, 7, and 8 are rejected under 35 U.S.C. 102(b) as being anticipated by Grass et al. (US 2003/0040669).

5. Regarding claims 1 and 7, Grass et al. discloses a device and method, comprising an imaging device (paragraph 38, last 4 lines) for producing two-dimensional projection pictures (fig. 1, D<sub>i</sub> and E<sub>n</sub>) of the vascular system (fig. 1, in #3) taken from different directions; a necessary injection device for controlled injection of a contrast medium into the vascular system for the contrast medium (paragraph 29); a control unit (fig. 1, #17) that is coupled to the imaging device and that is designed to drive the imaging device in accordance with the following steps: a) production of projection pictures taken from the same projection direction at a high picture-taking rate during inflow of the contrast medium after a contrast-medium injection (paragraph 38); b) rotation of the imaging device around the vascular system and production of projection pictures taken from different directions while the vascular system is filled with contrast medium (paragraph 31).
6. Regarding claims 2 and 8, Grass et al. further discloses that the imaging device is a rotation X-ray unit (fig. 1, #12 and 13).
7. Regarding claim 3, Grass et al. further discloses that, during the rotation of the rotation X-ray unit (paragraph 31), the projection pictures are necessarily produced at a lower picture-taking rate and/or at a lower radiation dose compared to a higher rate or dose.
8. Regarding claim 4, Grass et al. further discloses that the control unit (fig. 1, #17) is designed to drive the imaging device (fig. 1, #12 and 13) after completion of the rotation to

produce projection pictures taken from a fixed projection direction (paragraph 38) necessarily at a preferably higher picture-taking rate compared to a lower rate.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Grass et al. as applied to claim 1 above, and further in view of Watanabe et al. (JP 2001-149360).

Grass et al. discloses a device as recited above.

However, Grass et al. fails to disclose initiating the beginning of rotation as a function of an image analysis of projection pictures produced during inflow of contrast medium.

Watanabe et al. teaches initiating the beginning of rotation as a function of an image analysis of projection pictures produced during inflow of contrast medium (abstract).

It would have been obvious, to one having ordinary skill in the art at the time the invention was made, to modify the device of Grass et al. with the initiating control of Watanabe et al., since one would have been motivated to make such a modification for preventing artifact generation during data generation and increasing the quality of images (abstract; advantage) as shown by Watanabe et al.

Furthermore, since the Examiner finds that the prior art (i.e., Grass et al.) contained a “base” device upon which the claimed invention can be seen as an “improvement”, and since the

Examiner finds that the prior art (i.e., Watanabe et al.) contained a known technique that is applicable to the base device (of Grass et al.), the Examiner thus finds that one of ordinary skill in the art would have recognized that applying the known technique (of Watanabe et al.) would have yielded predictable results and resulted in an improved system. Therefore, such a claimed combination would have been obvious.

10. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Grass et al. as applied to claim 1 above, and further in view of Gelman (US 6337992).

Grass et al. discloses a device as recited above.

However, Grass et al. fails to disclose that the control unit is coupled to the injection device in order to record and/or to control the injection process.

Gelman teaches that a control unit is coupled to an injection device in order to record and/or to control an injection process (col. 4, lines 50-56).

It would have been obvious, to one having ordinary skill in the art at the time the invention was made, to modify the device of Grass et al. with the control unit of Gelman, since one would have been motivated to make such a modification for easier use with automation of the process.

Furthermore, since the Examiner finds that the prior art (i.e., Grass et al.) contained a “base” device upon which the claimed invention can be seen as an “improvement”, and since the Examiner finds that the prior art (i.e., Gelman) contained a known technique that is applicable to the base device (of Grass et al.), the Examiner thus finds that one of ordinary skill in the art would have recognized that applying the known technique (of Gelman) would have yielded

predictable results and resulted in an improved system. Therefore, such a claimed combination would have been obvious.

11. Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Grass et al. as applied to claim 1 above, and further in view of Honda et al. (US 6449337).

Grass et al. discloses a device as recited above.

However, Grass et al. fails to disclose that the picture-taking rate and/or radiation dose is reduced during step b).

Honda et al. teaches that a picture-taking rate and/or radiation dose is reduced anytime (abstract and figs. 7 or 8).

It would have been obvious, to one having ordinary skill in the art at the time the invention was made, to modify the method of Grass et al. with the reducing of Honda et al. anytime, which would include the time during step b) of Grass et al. in combination, since one would have been motivated to make such a modification for reducing the frequency of restarts (col. 1, lines 36-55) as shown by Honda et al.

#### ***Allowable Subject Matter***

12. Claim 10 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. The following is a statement of reasons for the indication of allowable subject matter.



The prior art fails to disclose or fairly suggest a method for three-dimensional reconstruction of flow conditions in a vascular system with aid from two-dimensional projections of the vascular system during a contrast-medium injection, including the following steps: a) production of projection pictures taken from the same projection direction (A) at a high picture-taking rate during inflow of the contrast medium; and after step b), projection pictures are produced from a fixed direction (C) during drainage of the contrast medium from the vascular system (3), in combination with all of the other limitations in the claim.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Chih-Cheng Glen Kao whose telephone number is (571) 272-2492. The examiner can normally be reached on M - F (9 am to 5 pm).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ed Glick can be reached on (571) 272-2490. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Chih-Cheng Glen Kao/  
Primary Examiner, Art Unit 2882